

CLAIMS

1. A probiotic composition comprising at least two lactic acid bacterial strains, characterized in that said at least two lactic acid bacterial strains are able colonize the gastrointestinal tract of humans and animals and in combination have at least two beneficial properties, which are an intestinal survival property, an intestinal binding property, an infection protecting property, and a fiber fermenting property, said at least two lactic acid bacterial strains being selected from the group comprising *Lactobacillus plantarum* F5 (LMG P-20604), *Lactobacillus plantarum* F26 (LMG P-20605), *Lactobacillus plantarum* 2592 (LMG P-20606), *Pediococcus penosaceus* 16:1 (LMG P-20608), and *Leuconostoc mesenteroides* 77:1 (LMG P-20607), *Lactobacillus plantarum* 50:1 (P-20609), and *Lactobacillus paracasei* (*paracasei*) F19 (LMG P-17806).

2. A probiotic composition as in claim 1, characterized in that said lactic acid bacterial strains are viable bacteria of at least 10^{10} CFU/g.

3. A probiotic composition as in claim 1, characterized in that said intestinal survival property is ability to grow in the presence of bile.

4. A probiotic composition as in claim 1, characterized in that said intestinal survival property is ability to survive at a low pH.

5. A probiotic composition as in claim 4, characterized in that said ability to survive at low pH is survival at low pH in the presence pepsin.

30 6. A probiotic composition as in claim 1 and 4, characterized in that said intestinal survival property is ability to produce stress proteins.

7. A probiotic composition as in claim 6, characterized in that said stress proteins cross-react with heat shock proteins.

8. A probiotic composition as in claim 1, characterized in that said intestinal binding property is ability to bind to mucin.

9. A probiotic composition as in claim 1, characterized in that said intestinal binding property is ability to bind to extracellular matrix proteins.

10. A probiotic composition as in claim 1, characterized in that said intestinal binding property is ability to bind to glucosaminoglycans.

11. A probiotic composition as in claim 1, characterized in that said intestinal binding property is ability to express cell surface hydrophobicity.

12. A probiotic composition as in claim 1, characterized in that said infection protecting property is ability to produce bacteriocins.

13. A probiotic composition as in claim 12, characterized in that said bacteriocins have activity against grampositive bacteria.

20 14. A probiotic composition as in claim 12, characterized in that said bacteriocins have activity against gramnegative bacteria.

25 15. A probiotic composition as in claim 12, characterized in that said bacteriocins have activity against yeast.

16. A probiotic composition as in claim 1, characterized in that said infection protecting property is ability to produce antioxidants.

30 17. A probiotic composition as in claim 1, characterized in that said infection protecting property is ability to induce a pro-inflammatory cytokin response.

35 18. A probiotic composition as in claim 1, characterized in that said fiber fermenting property is ability to ferment amylopectin and inulin.

19. Use of a lactic acid bacterial strain, selected from the group comprising *Lactobacillus plantarum* F5 (LMG P-20604), *Lactobacillus plantarum* F26 (LMG P-20605), *Lactobacillus plantarum* 2592 (LMG P-20606), *Pediococcus penosaceus* 16:1 (LMG P-20608), and *Leuconostoc mesenteroides* 77:1 (LMG P-20607), and *Lactobacillus plantarum* 50:1 (P-20609), alone or in combination, as a probiotic additive in food or feed.